Air Force Research Laboratory|AFRL

Science and Technology for Tomorrow's Air and Space Force

Air Force SBIR/STTR Celebrating 100 Years of Air & Space Innovation

Success Story

NEW VISOR OFFERS CLEAR IMPROVEMENT

A newly developed visor for flight helmets permits aircrew members to vary the visor's tint from 15–65% simply by turning a knob. The visor can also adjust itself automatically as lighting conditions change and operate for many hours off of a small battery. This unprecedented capability will allow pilots to optimize their vision and enhance the visibility of helmet-mounted displays (HMDs).

Air Force Research Laboratory
Wright-Patterson AFB OH

Accomplishment

Researchers and engineers within the Human Effectiveness Directorate's Visual Display Systems Branch conducted a Phase II Small Business Innovation Research project with AlphaMicron, Inc. (Kent, Ohio) and developed a visor for the HGU-55/P flight helmet that varies its tint electronically.

Although the visor's original purpose was to increase the contrast of HMD images under bright daytime viewing conditions, it also is useful as a stand-alone alternative to conventional, fixed-tint visors. Commercial applications of the technology include sunglasses, ski goggles, and visors for motorcycle helmets.

Background

The new visor uses a thin layer of liquid crystals to control the orientation of dichroic dye molecules. This design provides fast switching speed, high optical quality, a wide array of available tints, and allows the visor to revert to its lightest-tint state if power is lost.

Human Effectiveness
Support to the Warfighter

Additional information

To receive more information about this or other activities in the Air Force Research Laboratory, contact TECH CONNECT, AFRL/XPTC, (800) 203-6451 and you will be directed to the appropriate laboratory expert. (03-HE-23)